

WHAT IS CLAIMED IS:

1 1. An apparatus for routing a line through a vehicle frame tube, the
2 apparatus comprising:
3 a line including an end portion configured to protrude from a side opening
4 through a wall of the vehicle frame tube, the end portion of the line having at an end a fitting
5 for coupling with an external line; and
6 a tube extension configured to be attached to the wall of the vehicle frame tube
7 around the side opening and to surround the end portion of the line, the tube extension being
8 coupled with the fitting at the end of the line.

1 2. The apparatus of claim 1 wherein the fitting comprises a male thread.

1 3. The apparatus of claim 1 wherein the fitting comprises a female thread.

1 4. The apparatus of claim 3 wherein the fitting comprises a freely
2 spinning compression fitting.

1 5. The apparatus of claim 1 wherein the end of the fitting comprises a
2 flared end coupled with the fitting.

1 6. The apparatus of claim 1 wherein the fitting comprises a compression
2 fitting affixed to the end of the line.

1 7. The apparatus of claim 1 wherein the tube extension is affixed to the
2 fitting at the end of the line.

1 8. The apparatus of claim 1 wherein the tube extension comprises two
2 longitudinal tube sections which are joined together.

1 9. The apparatus of claim 8 wherein the two longitudinal tube sections
2 are welded together to form the tube extension and are configured to be welded to the wall of
3 the vehicle frame tube around the side opening.

1 10. An apparatus for routing a line through a vehicle frame tube, the
2 apparatus comprising:

3 a line including two end portions each configured to protrude from a side
4 opening through a wall of the vehicle frame tube, each end portion of the line having at an
5 end a fitting for coupling with an external line; and

6 a pair of tube extensions each configured to be attached to the wall of the
7 vehicle frame tube around one of the side openings and to surround the end portion of the
8 line, the tube extension being coupled with the fitting at the end of the line.

1 11. The apparatus of claim 10 wherein each fitting comprises a
2 compression fitting affixed to the end of the line.

1 12. The apparatus of claim 10 wherein each tube extension comprises two
2 longitudinal tube sections which are joined together to form the tube extension and are
3 configured to be joined to the wall of the vehicle frame tube around the side opening.

4 13. A method for routing a line through a vehicle frame tube, the method
5 comprising:

6 placing a line inside the vehicle frame tube and positioning an end portion of
7 the line to protrude from a side opening through a wall of the vehicle frame tube;

8 providing at the end of the protruded end portion of the line a fitting for
9 coupling with an external line; and

10 attaching a tube extension to the wall of the vehicle frame tube around the side
11 opening to surround the end portion of the line and to couple with the fitting at the end of the
12 line.

1 14. The method of claim 13 wherein the fitting comprises a freely spinning
2 compression fitting.

1 15. The method of claim 13 wherein providing the fitting comprises
2 affixing a compression fitting to the end of the line.

1 16. The method of claim 13 wherein attaching the tube extension
2 comprises affixing the tube extension to the fitting at the end of the line.

1 17. The method of claim 13 further comprising forming a flare at the end
2 of the line to couple with the fitting.

1 18. The method of claim 13 wherein attaching the tube extension
2 comprises joining two longitudinal tube sections together to surround the end portion of the
3 line.

1 19. The method of claim 13 further comprising providing an external line
2 with an external line fitting and coupling the external line with the end of the line by
3 connecting the external line fitting with the fitting at the end of the line.

1 20. The method of claim 13 further comprising:
2 positioning a second end portion of the line to protrude from a second side
3 opening through the wall of the vehicle frame tube;
4 providing at the second end of the second protruded end portion of the line a
5 second fitting for coupling with a second external line; and
6 attaching a second tube extension to the wall of the vehicle frame tube around
7 the second side opening to surround the second end portion of the line and to couple with the
8 second fitting at the second end of the line.

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